

TO THE COUNCIL OF MASON COLLEGE, BIRMINGHAM.

15
Gentlemen,

I beg to offer myself as a Candidate for the Chair of Chemistry now vacant.

The manner in which I have discharged my duties as Lecturer on Chemistry, for the last thirteen years, is within your knowledge, and this renders outside testimonials as to my qualifications as a teacher and lecturer unnecessary. I beg, however, to submit for your consideration copies of testimonials obtained on a recent occasion, which will be evidence of my other qualifications for the post. I would, in this connection, specially direct your attention to the testimonials received from the leading chemists in this country and on the Continent, which bear upon my reputation as an original investigator, and to the list of papers which I have communicated to various scientific journals, although, as the charge of the Laboratory has been almost entirely in my hands for several years, the time for original work has become more and more limited.

The other testimonials will show what success has attended my work as a lecturer on the popular side of my subject, a branch in which I have had considerable experience during sixteen years.

I am thirty-eight years of age ; an M.A. and D.Sc. of the University of Edinburgh ; and in addition to being a Fellow of the Royal Society of Edinburgh, and of the Institute of Chemistry, have served for four years as Examiner for the Institute of Chemistry, and at present am Assistant Examiner for the University of London, and Recorder of the Chemical Section of the British Association for the Advancement of Science.

Should I have the honour of being elected to the Chair, it will be my constant endeavour to advance the interests of the College, in which I shall be assisted by the very friendly relationships which have always existed between the students and myself.

I have the honour to remain,

Your obedient Servant,

W. W. J. NICOL,
M.A., D.Sc., F.R.S.E., F.I.C., F.C.S.

Letter of Application
FOR
THE CHAIR OF CHEMISTRY
IN
THE HERIOT-WATT COLLEGE, EDINBURGH,
WITH
TESTIMONIALS,
REFERENCES,
AND
LIST OF PUBLISHED PAPERS.

W. W. J. NICOL,

M.A., D.Sc., F.R.S.E., F.I.C., F.C.S.,

LECTURER ON CHEMISTRY, MASON COLLEGE, BIRMINGHAM ;

LATE LECTURER ON CHEMISTRY, UNIVERSITY COLLEGE, BRISTOL ;

LATE EXAMINER FOR THE INSTITUTE OF CHEMISTRY ;

ASSISTANT EXAMINER IN CHEMISTRY FOR THE UNIVERSITY OF LONDON.

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TO THE
Governors of the Heriot-Watt College, Edinburgh.

MASON COLLEGE,
BIRMINGHAM, *August* 1892.

MY LORD PROVOST, LADIES, AND GENTLEMEN,

I beg to offer myself as a candidate for the Chair of Chemistry in the Heriot-Watt College, and to submit for your consideration the following statement of my qualifications for the post.

University Studies,
Testimonials
10, 11, 16.

I am thirty-seven years of age. I entered the University of Edinburgh in 1872, and after graduating as M.A., took the Medal in Chemistry and the Hope Prize Scholarship for practical work in the Laboratory, subsequently taking the degrees of B.Sc. and D.Sc. in Chemistry. I also worked in the Research Laboratory of the University of Berlin.

As a teacher I have had more than fifteen years' experience, commencing as Demonstrator in the Edinburgh University Laboratory (a condition attached to the Hope Prize Scholarship). This post I held only for a few months, as, early in 1876, I was appointed Lecturer on Chemistry in University College, Bristol, which was founded in that year. There I remained for four years. In 1881 I was appointed Lecturer on Chemistry in Mason College, Birmingham, the post I now hold.

Nature of work in Bristol,
Testimonials
6, 7.

The work which has engaged my attention during these years has been of the most varied character. In Bristol, in addition to the ordinary teaching work for degrees in Science and Medicine at London and elsewhere, I taught Theoretical and Practical Chemistry to large evening classes of artisans and others, while the day classes and laboratory were attended by numbers of students of Applied Chemistry, especially brewers, works' analysts, soap boilers, and chemical manufacturers. I also, under the provisions of an agreement with the Clothworkers' Company in London, conducted classes for some time at Stroud on the principles of Theoretical and Practical Chemistry as applied to dyeing, and other branches of the West of England cloth industry.

Nature of work in Birmingham, Testimonials
1, 2, 3, 4, 5.

In Birmingham my work has been even more varied ; the lecturing has usually included three distinct courses for those studying for the London degrees, engineers, and others ; while the laboratory, the teaching in which is largely entrusted to me, is attended by fifty to seventy students, comprising those in Medicine, Engineering (mechanical, electrical, and coal-mining), brewers, assayers, metallurgists, manufacturing chemists, and those studying other branches of Applied Chemistry. Many of these are sons of masters or managers of the large works in the district, and pass directly from the laboratory to responsible positions in these or other works of a similar kind. Others, again, are studying for the Examinations of the Institute of Chemistry, or for the Public Health Degrees of Cambridge or Edinburgh, with the view of fitting themselves for the offices of Public Analysts or Medical Officers of Health.

Successes of Birmingham Students, Testimonial
1.

The nature of my work in Birmingham and the success of my efforts as a teacher for University degrees, will be best seen from the following statement of the successful passes of Mason College Students who have, during the last nine years, passed through my hands in the Lecture-room and Laboratory :—

UNIVERSITY OF LONDON, 1882-1892.

	PASSES.				HONOURS.			
D.Sc.	1	...	...	...
B.Sc.	19	...	...	...	14
M.A.	1	...	...	...
B.A.	11	...	...	...	4
Intermediate	27	...	...	...
Prelim. Sci., M.B.,	80	}	...	...	22
Intermediate Science	32				
Intermediate Arts	12	...	...	...	2
Matriculation	73	...	...	...	12
				—				—
				256				54

I may perhaps add that during the whole fifteen years of teaching work, I have not once been absent from my duties through illness.

Outside work.
Extension and other
Lectures.

In addition to the Academic teaching carried on by me in both Bristol and Birmingham, I have been repeatedly called upon to deliver lectures of a nature outside the scope of the systematic work of these Colleges, and have had a large and varied experience in lecturing to artisans and other audiences. Thus for three years I held the appointment of Lecturer on the Gilchrist Trust, in the West of England, and during that time delivered lectures to large audiences (400 to 900) in Bristol, Bath, Frome, Trowbridge, Warminster, Weston, Bridgwater, and Newport. I also lectured at Christmas in

Gilchrist Lectures,
Testimonial
23.

Christmas Lectures,
Testimonial 24.

the Bristol Museum and Library on the lines of the Lectures to Children at the Royal Institution, London.

Fire Brigade.
Other Towns.
Free Artisan Lectures.

In Birmingham I have lectured to the members of the Fire Brigade, also at various suburban Institutes and at Derby, and during eight years to large artisan audiences in connection with the free courses of lectures given by various members of the College staff. These courses are so well attended that each has to be repeated, as our accommodation is not sufficient to allow the whole of those who wish to attend to be present at one time.

Extension Lectures in
Worcester, Testimonials
21, 22.

In Worcester I delivered a course of six Lectures in the evening, on Everyday Chemistry, under the auspices of the Worcester Students' Association, a result of Cambridge Extension Lectures. While during the last two winters I have given courses of semi-popular lectures to the members of the Institute of Fire Insurance Agents, on the more important Fire Risks, including Electric Lighting.

Original Research,
Testimonials
12-20.

Though my time has been so fully occupied by my teaching duties, I have been able to devote some considerable attention to original research. Though my attention was first directed to the subject of Organic Chemistry, I was early attracted by the still-unsolved question of Solution; this has fully absorbed my spare time during the past ten years, and the majority of my papers are on this subject. I append a list of those already published, and may, perhaps, be permitted to add that my work in this direction has been most favourably received and commented on by British and Foreign Chemists, among others by Pattison Muir, in his work on Thermo-Chemistry, and by Mendelèeff, of St Petersburg, in his classical work on Solution,* where he repeatedly refers to my published papers. As the result of my work in this branch of Chemistry, the Article on *Solution* in the new Technical Dictionary has been entrusted to me.

Photographic Printing
Patents.

I have also invented and patented two new processes of Photographic Printing (Patent 5,374, 1889-91) which have been most favourably received by the Photographic Journals, and are being worked on a considerable scale.

Learned Societies.

I am a Fellow of the Royal Society of Edinburgh, of the Institute of Chemistry, and of the Chemical Society of London. I am also a

* Thermo-Chemistry; M. M. Pattison Muir, M.A., Cambridge, 1885, pages 167-171. *Isladovanie vodnich Rastvoroff*, &c. D. Mendelèeff, St Petersburg, 1887, page 13. "Nicol, among the contemporary workers on the subject of Solution, is distinguished for the clearness of his insight and the accuracy of his observations." (Translation.)

Examinerships.

Secretary of the Chemical Section of the British Association for the Advancement of Science, and Secretary of two Committees of that Section, one on the Bibliography of Solution, the other for the Investigation of the Nature of Solution; and for the prosecution of my research on Solution have received repeated grants from the British Association and the Chemical Society. In addition, I was Examiner for the Institute of Chemistry, from 1888-1892, and am at present Assistant Examiner in Chemistry for the University of London.

Should I have the honour of being appointed to the Professorship of Chemistry, I shall endeavour conscientiously to fulfil the duties of the Chair, and to maintain the traditions of the College as a school of original research.

I have the honour to remain,

Your obedient Servant,

W. W. J. NICOL, M.A., D.Sc.

Reference may be made to the following :—

PROFESSOR HEATH, Principal, Mason College, Birmingham.

PROFESSOR TILDEN, F.R.S., Mason College, Birmingham.

PROFESSOR WM. RAMSAY, F.R.S., University College,
London.

LIST OF PAPERS.

1. On the Action of Sulphide of Potassium upon Chloroform.
Transactions of the Royal Society of Edinburgh, 1880.
2. On the Action of Sulphydrate of Potassium on Chloral Hydrate.
Chemical Society, January 1880.
3. The Action of Heat on Thioformanilide.
Proceedings of the Royal Society of Edinburgh, March 1881.
Berichte der deutschen chemischen Gesellschaft.
4. The Condition of Ammonium Salts dissolved in water.
Proceedings of the Royal Society of Edinburgh, July 1882.
5. The Co-efficient of Expansion of Sodium Sulphate Solutions.
Berichte der deutschen chemischen Gesellschaft, August 1882.
6. On the Nature of Solution.
Royal Society, Edinburgh, January 1883.
Philosophical Magazine, February 1883.
7. New and Modified Specific Gravity Apparatus.
Chemical News, February 1883.
8. On the Volume Alteration attending the Mixture of Salt-Solutions.
Chemical Society's Journal, March 1883.
9. A New Form of Constant-Temperature Bath.
Philosophical Magazine, June 1883.
10. On the Molecular Volumes of Salt-Solutions.
Philosophical Magazine, August 1883.
11. On Equilibrium in Mixed Salt-Solutions.
Philosophical Magazine, February 1884.
12. Zur Theorie der Salzlösungen.
Berichte der deutschen chemischen Gesellschaft, 1883.
13. Die molekular Volume von Salzlösungen.
Berichte der deutschen chemischen Gesellschaft, 1884.
14. Saturation of Salt-Solutions.
Philosophical Magazine, June 1884.
15. On the Connection between Pseudo-Solution and True Solution.
Chemical News, September 1884.

16. The Molecular Volumes of Salt-Solutions. Part II.—Water of Crystallization.
Philosophical Magazine, September 1884.
17. The Nature of Solution. Part II.—Boiling Points of Salt-Solutions.
Philosophical Magazine, October 1884.
18. A Theory of Solution.
British Association, Montreal, 1884.
Abstract, Proceedings of Royal Society, Edinburgh, 1884.
19. Eine Theorie der Lösung.
Berichte der deutschen chemischen Gesellschaft, 1885.
20. On Supersaturation of Salt-Solutions.
Philosophical Magazine, June 1885.
21. On Supersaturation of Salt-Solutions.
Philosophical Magazine, September 1885.
22. Report of a Committee of the British Association.
Aberdeen, 1885.
23. Saturation of Salt-Solutions. Part II.
Philosophical Magazine, January 1886.
24. Water of Crystallization.
Chemical Society's Journal, August 1886.
25. Report of a Committee of the British Association.
Birmingham, 1886.
26. Water of Crystallization in Solution.
British Association, Birmingham, 1886.
Chemical News, October 1886.
27. Vapour Pressures of Salt-Solutions.
Philosophical Magazine, December 1886.
28. On the Co-efficient of Expansion of Salt-Solutions.
Philosophical Magazine, May 1887.
29. Supersaturation of Salt-Solutions.
Chemical Society's Journal, May 1887.
30. On the Specific Gravity of Aqueous Glycerine-Solutions.
Pharmaceutical Journal, 1887.
31. Report of a Committee of the British Association on Solution.
Manchester, 1887.

32. Report of a Committee of the British Association on the Bibliography of Solution.
Manchester, 1887.
33. Thermal Results and their Bearing on the Question of Solution.
British Association, Manchester, 1887.
34. A New Shortened Self-acting Sprengel Pump.
British Association, Manchester, 1887.
Engineering, 1888.
35. Report of a Committee of the British Association on Solution.
Bath, 1888
36. Report of a Committee of the British Association on the Bibliography of Solution.
Bath, 1888.
37. A new Gas Analysis Apparatus.
British Association, Bath, 1888.
38. Report of a Committee of the British Association on Solution.
Newcastle, 1889.
39. Report of a Committee of the British Association on the Bibliography of Solution.
Newcastle, 1889.
40. Report of a Committee of the British Association on Solution.
Leeds, 1890.
41. Report of a Committee of the British Association on the Bibliography of Solution.
Leeds, 1890.
42. Improvements in the methods of Photographic Printing.
Patent, 5374. 1889.
43. Improvements in Photographic Printing Processes.
Patent, 1891.
44. The Mutual Solubility of Salts in Water.
Philosophical Magazine, 1891.
45. A recent Case of Spontaneous Combustion in Birmingham.
Philosophical Society, Birmingham.
46. Article "Solution," in Vol. III. Thorpe's Dictionary of Technical Chemistry (in the press).
47. Report of a Committee of the British Association on Solution.
Edinburgh, 1892.
48. Report of a Committee of the British Association on the Bibliography of Solution.
Edinburgh, 1892.
49. On the Molecular Volumes of Organic Compounds.
British Association, Edinburgh, 1892.
50. On Iodine Solutions.
British Association, Edinburgh, 1892.

I.

From LAWSON TAIT, F.R.C.S., formerly President of the Birmingham Branch British Medical Association; Bailiff and President of the Council of Mason College, Birmingham.

BIRMINGHAM, 8th August 1892.

ON behalf of the Council of Mason College, Birmingham, I have very sincere pleasure in recommending very strongly Dr W. W. J. NICOL as a candidate for the Professorship of Chemistry in the Heriot-Watt College. Dr NICOL was appointed Lecturer in the Mason College in 1881, and he has been intimately and actively engaged in the work of the College ever since. He has had very large experience in tuition, both practical in the laboratory classes, which are of large size, and in the systematic work of the lecture room. The results of his work have been extremely satisfactory to the Council. He has had the advantage during eleven years of working under one of the most distinguished English chemists of the present day and one of our most successful teachers.

He is a clear and fluent lecturer; he is highly respected by his students, and maintains without trouble perfect discipline. Dr NICOL has also under various arrangements conducted large artisan classes in different centres of population, and these I have reason to know have been attended by great success. He has also highly distinguished himself in the field of original research.

It will be a matter of regret to the Council of the College to lose Dr NICOL's services, but at the same time they feel that should he be elected to the Chair of Chemistry in the Heriot-Watt College, Dr NICOL will secure a well-deserved promotion, which will at the same time be a satisfaction to the Council.

I have especial pleasure in pointing out that our Chemistry students who have presented themselves to the University of London for examination have had very marked success; and as Dr NICOL has had a very important part to play in the instruction of all of them, we feel that a considerable part of the credit of the results is due to him.

LAWSON TAIT.

II.

*From R. S. HEATH, M.A. (Cantab.), D.Sc. (Lond.), late Fellow of Trinity College, Cambridge ;
Principal and Professor of Mathematics, Mason College, Birmingham.*

MASON COLLEGE,
BIRMINGHAM, August 1892.

I HAVE great pleasure in bearing testimony to the admirable personal qualities and eminent professional fitness of Dr W. W. J. NICOL for the duties appertaining to the Chair of Chemistry in the Heriot-Watt College. Dr NICOL is one of the oldest members of our teaching staff. He commenced his duties here in October 1881, and for eleven years he has had a very wide experience of all kinds of teaching. He has delivered systematic courses of instruction, has superintended the work in the laboratories, and given popular lectures to artisan audiences, and he has been eminently successful in all these branches of teaching.

He has the power of maintaining perfect discipline, and of winning the attention of his audience as well as the esteem and respect of his students. He has always been on the best of terms with the other members of the teaching staff.

It is for others to speak of his very wide knowledge of his own subject, and of the original researches he has carried on, accounts of which are published in the Journals of several learned Societies, but I am sure I have the concurrence of all my colleagues in wishing Dr NICOL success in his present application. We shall miss him keenly if he leaves us, but shall rejoice to hear that he has found a sphere where his great powers and energies will have a wider scope.

R. S. HEATH.

III.

From W. A. TILDEN, D.Sc., F.R.S., F.I.C., Professor of Chemistry in Mason College, Birmingham; President of the Institute of Chemistry; Examiner in Chemistry for the University of Oxford, and the Science and Art Department.

BIRMINGHAM, August 1892.

DR W. W. J. NICOL being a candidate for the Professorship of Chemistry in the Heriot-Watt College, I have great pleasure in offering my testimony as to his fitness for the office.

For eleven years Dr NICOL has occupied the post of chief assistant in the Department under my charge in this College. The students here include many who are learning Chemistry with a view to its application to manufactures, many others who are preparing to present themselves for the degrees of the London University, besides about thirty students annually from the Medical School. Dr NICOL gives two courses of lectures in the year to an audience which includes fifteen to twenty engineering students, together with others of the classes mentioned above. He has also contributed very successful lectures to the popular courses given to some hundreds of artisans. The larger part of the teaching of Experimental Chemistry to the seventy or eighty Laboratory Students has also been entrusted to him.

In all the duties he has been called upon to discharge, he has shown singular ability and has achieved a complete success. His teaching alike in the laboratory and lecture room is always clear and effective, and he is regarded with confidence and respect by the students.

Dr NICOL is an unusually expert manipulator, and is familiar with modern Scientific Chemistry. His researches into the physical and chemical phenomena of Solution, systematically prosecuted for several years past, have made their mark; and whatever differences of opinion may still prevail in regard to the theory of the subject, Dr NICOL's experiments take rank as the most systematic and most accurate that have yet been made in this department of Chemistry.

I cannot conclude without expressing my indebtedness to Dr NICOL's willing co-operation in all that concerns the welfare of the Chemical Department here, whether falling within the limits of his official duties or not. To such assistance, and to the cordial and friendly relations that have always subsisted between us, I attribute in large measure the successful working of the young school of Chemistry in this College.

It may be well to add that Dr NICOL has always enjoyed vigorous health, and the performance of his duties here has never been interrupted by illness.

WILLIAM A. TILDEN.

IV.

*From J. H. POYNTING, D.Sc. (Cantab.), F.R.S., late Fellow of Trinity College, Cambridge ;
Professor of Physics in the Mason College, Birmingham.*

BIRMINGHAM, August 1892.

DR NICOL having informed me that he is a candidate for the Chair of Chemistry in the Heriot-Watt College, I have much pleasure in bearing testimony to his qualifications for the post.

During the eleven years that we have been colleagues at the Mason College I have known Dr NICOL intimately, and I am quite sure that his scientific ability is of that high rank which should be looked for in the occupant of the chair for which he is now a candidate. I can fully confirm from personal knowledge the impression that would be gathered from Dr NICOL'S published work, that he is an exceptionally careful and accurate experimenter. His ingenuity in devising apparatus is of the highest order.

I have had several opportunities of hearing Dr NICOL lecture or speak, and have always found that he expresses himself clearly, and with ease.

J. H. POYNTING.

V.

From M. J. M. HILL, M.A. (London and Cantab.), Professor of Mathematics; Fellow and Member of the Council of University College, London; late Examiner in Mathematics in the University of London; late Fellow of St Peter's College, Cambridge; Smith's Prizeman of the University of Cambridge.

UNIVERSITY COLLEGE,
LONDON, August 1892.

*To the Electors to the Chair of Chemistry
in the Heriot-Watt College.*

MY LORDS AND GENTLEMEN,—My intimate friend, Dr W. W. J. NICOL, being a candidate for the Chair of Chemistry in the Heriot-Watt College, has asked me to say what I know of his qualifications for that post.

I made his acquaintance about eleven years ago when he was appointed Lecturer on Chemistry at the Mason Science College, and it was not long before our acquaintance ripened into a friendship which has continued unbroken.

I have, therefore, had the most frequent opportunities of arriving at a knowledge of his character as a man and as a colleague, and of understanding how earnestly and intently he pursues the chemical investigations to which his thoughts are constantly reverting.

He was popular with his students during the time (1880-1884) that I occupied the Chair of Mathematics at the Mason Science College, and from an address presented to him on a recent occasion by present and former pupils, I know that he is so still. This is from one point of view the strongest evidence on behalf of a candidate for a Professorship, for the hardest examination which, in these days of examinations one has to pass, is that which a teacher undergoes at the hands of his pupils.

He has had considerable experience in lecturing to large audiences under the provisions of the Gilchrist Trust, and he has the strength of will and character necessary to control students without apparent effort. He has, too, that love of knowledge for its own sake, and that ability to prosecute independent research, which wins for a teacher the respect of his pupils in a manner impossible for one who merely communicates to them the thoughts of others.

Though not a Chemist, I may perhaps be allowed to say that the numerous papers which he has published on a single subject, viz., the Theory of Solution, are evidences of his energy and determination in the extension of the boundaries of his science.

I recommend him, therefore, most heartily and unreservedly to you for appointment to the post for which he is a candidate.—I remain, gentlemen, yours faithfully,

M. J. M. HILL.

VI.

From ALFRED MARSHALL, M.A., formerly Fellow of St John's College, Cambridge; late Principal, University College, Bristol; Professor of Political Economy in the University, Cambridge.

CAMBRIDGE.

DR W. W. J. NICOL was Lecturer on, and Demonstrator of, Chemistry in University College, Bristol, from its opening in October 1876 till April 1881, when, to the regret of all connected with the College, he resigned his post. During part of the last term of his work with us the Professorship of Chemistry was vacant, and Mr NICOL had the entire responsibility of the management of the Department. He was a conscientious, unselfish, hard worker, and did well everything he had to do. He was a true and generous helper in all the work of the College, and in every respect a most agreeable colleague. He was very popular among the students, both as a man and as a lecturer. His style of lecturing is simple and very clear; it is forcible and such as to sustain the attention of his audience. The lectures on Chemistry to the evening students of the College were always given by him. They were attended by more than thirty students, and were among the most successful given in the College. He had also a great power of explaining the principles of Science to the general public, as was shown in some "popular" lectures which he gave, under the direction of the College, on behalf of the Gilchrist Trustees.

Others will speak with greater authority than I can of his knowledge and ability as a Chemist, but the facts that have come under my own observation leave me no doubt but that he has a distinguished future before him.

ALFRED MARSHALL.

VII.

From E. A. LETTS, Ph.D., F.R.S.E., F.I.C., F.C.S., &c., Professor of Chemistry in Queen's College, Belfast; late Professor of Chemistry, University College, Bristol.

QUEEN'S COLLEGE,
BELFAST, August 1888.

MY experience of Dr NICOL, both as student and as colleague, extended over several years, and enables me to express a very high opinion of his talents and qualifications.

As a student he at once attracted my attention by the diligence and rapidity with which he acquired information. So high an opinion did I form of him, that, after superintending his studies in the Laboratory of the Edinburgh University for little more than a year, I recommended him for the post of Demonstrator and Lecturer at University College, Bristol, and I always congratulated myself and the College that he was so appointed. Few men of Dr NICOL'S age and experience could have acquitted themselves so well as he did in the arduous duties which that post involved.

As his chief I could always place implicit confidence in his punctuality, energy, and ability, and I always found him a zealous, faithful, and willing assistant. As a teacher, both in laboratory and lecture room, he was most successful and conscientious. The experience which he gained at Bristol cannot fail to be of the greatest use should he be appointed to the post for which he is a candidate, and his studies in Berlin, under Dr Hofmann, one of the greatest of living chemists, is another and very valuable qualification.

I may add that Dr NICOL has recently made some interesting and important researches which indicate that he is likely to take a high position in Chemical investigations.

E. A. LETTS.

VIII.

From T. E. THORPE, Ph.D., F.R.S., Professor of Chemistry in the Royal College of Science, London; Editor of the "Dictionary of Technical Chemistry"; Examiner in Chemistry, Science and Art Department.

ROYAL COLLEGE OF SCIENCE,
SOUTH KENSINGTON, *August 1892.*

I HAVE much pleasure in expressing the high opinion I have of Dr NICOL'S abilities as a Chemist and of his qualifications as a teacher. Dr NICOL is well known to men of science by his published researches and literary work on certain branches of Physical Chemistry. He is a well-read chemist, and as his work in connection with the Secretaryship of the Chemical Section of the British Association shows, a man of good general business aptitude. He has had considerable experience as a teacher at Mason College, Birmingham, and is thereby well qualified to undertake the duties in connection with the Professorship at the Heriot-Watt College, for which he informs me he is a candidate.

T. E. THORPE.

IX.

From WILLIAM RAMSAY, Ph.D., F.I.C., F.C.S., Professor of Chemistry, University College, London; late Principal and Professor of Chemistry, University College, Bristol.

20th June 1887.

HAVING been asked by Dr W. W. J. NICOL to state my opinion of his fitness for the Chair of Chemistry in the Heriot-Watt College, I have much pleasure in stating that if Dr NICOL be elected I should regard the choice in every way a fortunate one.

Dr NICOL is, I have reason to know, an interesting lecturer, a painstaking teacher, and a man of great knowledge of chemical literature. He possesses also what is very rare—great originality, and the requisite patience and perseverance to carry his researches to a successful issue. His work, in the particular branches on which he has recently been engaged, is known among all European chemists of note.

Dr NICOL possesses a good acquaintance with the ordinary processes of manufactures; but I should regard his power of origination, which can easily be—and no doubt would be—in such a post directed to technical subjects, as the highest possible recommendation. It cannot fail to stimulate others, and to embue them with a desire not to be content with what exists, but to seek for every possible improvement. I regard it as essential to our modern manufacturers and their foremen, that they should do all in their power to improve old and to invent new processes, if they are successfully to compete with foreign nations by whom this principle is universally recognised; and a man who has amply shown that he possesses the power of originating is the man to successfully train others on similar lines.

Personally, I esteem Dr NICOL as a courteous gentleman, who will be a pleasant colleague, and who will advance the interests of any institution with which he may be connected, and I am certain that a better man will not easily be found to fill the Chair for which he is a candidate.

WILLIAM RAMSAY.

9th August 1892.

I AM glad to be able to state that the above lines still express my opinion of Dr NICOL's qualifications for the position for which he is a candidate.

W. RAMSAY.

X.

**From ALEXANDER CRUM BROWN, M.A., M.D., D.Sc., F.R.S.S.L. & E., &c., Professor of Chemistry in the University of Edinburgh.*

UNIVERSITY OF EDINBURGH,
21st June 1887.

DR W. W. J. NICOL has informed me that he is a candidate for the Professorship of Chemistry in the Heriot-Watt College, and I have much pleasure in stating what I know of his qualifications.

Dr NICOL studied Chemistry here, working in the Chemical Laboratory during the Winter Session 1875-76, and the Summer of 1876, and attending the lectures.

Dr NICOL continued his chemical studies in Germany, and in 1881 took the degree of B.Sc. in this University, and in 1885 that of D.Sc. Dr NICOL has had experience in teaching in Birmingham, but of this others can speak better and from more immediate knowledge than I can.

His published work on the Action of Sulphide of Potassium on Chloral and on Chloroform is important and interesting, but that by which he is best known is his work on the Nature of Solution; on this subject he has made an extensive series of investigations, and even those who do not agree with his theoretical conclusions must admire the care with which he has collected his numerous facts, and the accuracy of his observations.

I have not heard Dr NICOL lecture, but have heard him explain his views on various chemical questions at meetings of the Royal Society of Edinburgh; he did so clearly and in fluent language.

ALEX. CRUM BROWN.

* Obtained on the last occasion.

XI.

** From P. G. TAIT, M.A., Sec. R.S.E., formerly Fellow of St Peter's College, Cambridge ;
Professor of Natural Philosophy in the University of Edinburgh.*

COLLEGE, EDINBURGH, *July* 1883.

MR W. W. J. NICOL has been known to me for several years, both as a successful student in the Natural Philosophy Class and as an energetic worker in the Physical Laboratory. He has devoted himself more especially to Chemistry, and has already done important original work. He has also had large experience in teaching ; and, on all these accounts, appears to me to be highly qualified for a Chair of Chemistry.

P. G. TAIT.

** Obtained on a previous occasion, and used with permission.*

XII.

**From M. M. PATTISON MUIR, M.A., F.R.S.E., Fellow and Praelector in Chemistry,
Gonville and Caius College, Cambridge.*

CAMBRIDGE, 22nd June 1887.

DR W. W. J. NICOL is well known among Chemists as a careful and very original investigator.

The work he has done, especially in connection with the extremely difficult chemico-physical subject of Solution, is, in my opinion, of first-rate importance.

If marked ability in original experimental investigation be a requisite in the Lecturer on Chemistry in the Heriot-Watt College, then I am sure the Electors could not find a more suitable man for the post than Dr NICOL.

M. M. PATTISON MUIR.

* Obtained on the last occasion.

XIII.

From M. BERTHELOT, Member of the Institute of France ; Professor of Chemistry in the College of France.

PARIS.

MONSIEUR,—Vous me faites l'honneur de m'adresser votre nouveau mémoire sur l'équilibre des sels dans leurs dissolutions. Je l'ai lu avec attention, comme les précédents, et j'ai trouvé qu'il apportait une lumière nouvelle à cette question si difficile. C'est par l'étude des propriétés physiques qu'elle peut être abordée ; la mesure du travail total accompli dans les mélanges étant donnée par les phénomènes thermiques, et l'analyse des travaux particuliers qui constituent ce total pouvant être établie par l'étude des volumes moléculaires comme vous le faites avec tant d'exactitude, par celle des dilations, par celle des propriétés optiques, par celle des points de congélation, par celle des points d'ébullition ; des tensions de vapeur, et des chaleurs spécifiques. En général lorsque les résultats tirés de plusieurs ordres de propriétés concordent les conséquences peuvent être acceptées comme générales. C'est là ce que fait à mes yeux, le grand intérêt de vos recherches, et c'est par cela qu'elles me paraissent vous rendre digne d'être pourvu d'une place de professeur ou votre instruction générale et votre originalité personnelle vous permettraient de rendre des grands services.

Veillez, Monsieur, agréer l'assurance de ma considération la plus distinguée.

M. BERTHELOT.

[*Translation.*]

PARIS.

SIR,—You have done me the honour of sending me your recent paper on the Equilibrium of Salts in their Solutions. I have read it with attention, as I have the preceding ones, and I find that it throws a new light on this very difficult question. It is by a study of the physical properties of liquids that this question can be solved ; while the amount of the total work accomplished in the mixture is given by the Thermal phenomena. The nature of the particular changes that make up this total can be established by the study of the molecular volumes, as you have done with such great accuracy, also by determination of the amount of expansion, of the optical properties, of the freezing points, of boiling points, vapour tensions, and specific heats. In general, when results obtained in several varieties of experiments agree together, the consequences may be accepted as general. It is this point that in my opinion forms the great importance of your researches, and it is for this reason they appear to render you worthy of a position as professor—a post in which your general attainments and personal originality will enable you to render great services.

Yours, &c.,

M. BERTHELOT.

XIV.

From D. MENDELEEFF, Professor of Chemistry, University of St Petersburg.

MONSIEUR,—Prenant un grand intérêt dans les travaux, concernant les combinaisons chimiques, dites indéterminées, je prends la liberté de vous témoigner ma sympathie pour l'ensemble de vos travaux sur les dissolutions salines. J'y trouve une multitude de données numériques concernant les densités et les volumes, dont l'exactitude, que j'ai eu occasion de vérifier, est aussi grande que celle des données de M. Marignac.

Votre conception des dissolutions, dont le germe se trouve dans les travaux de M. Kremers, m'est particulièrement sympathique. On peut espérer que le développement de ces vues menera à une théorie mécanico-chimique des dissolutions, et par conséquent aggrandira le domaine de la philosophie chimique.

Agréez, Monsieur et cher collègue, l'expression de mes sentiments les plus distingués.

D. MENDELEEFF.

[*Translation.*]

SIR,—Being very much interested in investigations concerning the so-called indefinite chemical compounds, I take the liberty of expressing to you my appreciation of the whole of your work on Solution. I have found there a large number of numerical data regarding the density and volumes of Salt-Solutions, the accuracy of which, so far as I have verified them, is as great as that of those given by Marignac.

Your theory of Solution, the germ of which may be found in the work of Kremers, is of special interest to me, and we may hope that a development of this view (of Solution) will lead to a mechanical chemical theory of Solution, and, in consequence, will enlarge the domain of Chemical Philosophy.

Accept, my dear colleague, the assurance of my regard.

D. MENDELEEFF.

XV.

From NICHOLAS MENSHUTKIN, *Professor of Chemistry in the Imperial University of St Petersburg.*

1st August 1888.

W. W. J. NICOL has devoted himself to the study of the properties of Solutions, and his work extends over the whole area of the mentioned chapter of our science as is manifested out of the work of M. NICOL in the latest years.

The studying of the conditions of the ammonium salts when dissolved in water brought M. NICOL to formulate his views on the nature of Solution very near to those formerly advanced by M. Dossios. Then in several papers M. NICOL treats the molecular volumes of Salt-Solutions in which we find a new formulation of the question. Many other papers have for subject the Investigation of Saturation and Supersaturation of Salt-Solutions, of the Vapour Pressures of Water from Salt-Solutions, and finally, the Expansion of Salt-Solutions.

M. NICOL is studying a branch of Chemistry surrounded with difficulties both practical and theoretical. The want of a theory of Solution has for consequence the absence of a beaten track in the studying of the subject. In all the experimental researches mentioned above M. NICOL stands on the height of the contemporanean science, manifests a great experimental skill and a complete knowledge of the literature of the subject.

NICHOLAS MENSHUTKIN.

XVI.

From the late A. W. HOFMANN, F.R.S., &c., Professor of Chemistry in the University of Berlin; Rector of the University of Berlin.

BERLIN, April 1881.

MR W. W. J. NICOL, M.A., B.Sc., of the University of Edinburgh, has worked during the last Winter Session in this University Laboratory under my direction. He has devoted himself more especially to researches within the domain of Organic Chemistry, and the fruit of his labours has been an investigation of the action of heat on Thioformanilide, an abstract of which has been communicated to the German Chemical Society, the paper itself being intended for the Royal Society of Edinburgh.

From the personal intercourse I have had with Mr NICOL, I have no hesitation to state my opinion that he possesses in an eminent degree both the ability and determination to expand the domain of Science, whether in the capacity of an experimental inquirer or of a teacher, and I sincerely hope that a sphere of activity may soon present itself, which will enable him to give proof of his powers to his own credit, and to the advantage of any institution that may enlist his services as a teacher of Experimental Science.

A. W. HOFMANN.

XVII.

From F. RUDORFF, Professor of Chemistry at the Polytechnicum, Charlottenberg, near Berlin.

BERLIN, 22 Juli 1888.

SEHR GEEHRTER HERR,—Zugleich mit diesen Zeilen erlaube ich mir Ihnen eine Arbeit über die Constitution der Lösungen zu überschicken.

Ich benutze diese Gelegenheit Ihnen zu danken für die wiederholte Übersendung Ihre Abhandlungen, welche ich mit dem grössten Interesse lese, da Ihre Arbeiten wesentlich dazu beitragen ein Gebiet der Chemie aufzuklären, welches bis jetzt noch wenig bearbeitet war.—

Mit vorzüglicher Hochachtung bin ich, Ihr ergebenster,

RUDORFF.

[*Translation.*]

BERLIN, 22nd July 1888.

DEAR SIR,—Along with this, I take the liberty of sending you a paper on the Constitution of Solutions.

I take this opportunity of thanking you for your papers which you have repeatedly sent to me. I read them with the greatest interest since your work contributes substantially to the clearing up of a branch of Chemistry which has hitherto been too little worked at.—I am respectfully, your most obliged,

RUDORFF.

XVIII.

From GUSTAV TAMMANN, University of Dorpat.

DORPAT,
RUSSIA, August 13, 1888.

HOCHGEEHRTER HERR,—Soeben von eine Reise aus Deutschland zurückgekehrt, erhalte ich, vielleicht leider zu spät, Ihr geschätztes Schreiben.

Empfangen Sie von mir die Versicherung, dass ich Ihre Arbeiten auf dem Gebiete der Lösungen stets hochgeschätzt habe. Dieselben haben in der That unsere Kenntniss über die Natur der Lösungen wesentlich bereichert und erweitert. Diese Anschauung theilen mit mir zahlreiche andere Forscher, mit denen ich mich zu unterhalten auf meiner Reise glückliche Gelegenheit fand.

Diese allgemeine Werthschätzung Ihre Arbeiten wird in Ihrem Vaterland von Ihren Collegen hoffentlich getheilt werden, und ich freue mich, sie, hochgeehrter Herr, schon im Voraus zur Erweiterung Ihres Wirkungskreises beglückwünschen zu dürfen.—Ihr ergebenster,

G. TAMMANN.

[*Translation.*]

SIR,—On my return from Germany from a journey I received your esteemed letter, unfortunately, I fear, too late.

Pray accept my assurance that I have always highly esteemed your work on the subject of Solution; it has, indeed, greatly enriched and extended our knowledge of the nature of Solution, and this opinion of mine is shared by the numerous other experimenters with whom it was my good fortune to converse during my journey.

This universal appreciation of the value of your work is, I trust, shared by your colleagues in your own country, and I am glad to venture to congratulate you even in anticipation of an extension of your sphere of work.

G. TAMMANN.

XIX.

From WILHELM OSTWALD, Ph.D., *Professor of Chemistry, Leipsic; Editor of the "Zeitschrift für physikalische Chemie."*

HERR DOKTOR W. W. J. NICOL hat seit einer Reihe von Jahren eine Anzahl umfassender und genauer Untersuchungen über die Gesetze der Lösungen durchgeführt, die zu einer Zeit begonnen wurden, als dieses Problem noch bei weitem nicht in dem Maasse, wie gegenwärtig, im Vordergrund des Interesses stand, und die unsere Kenntnisse dieses Gebietes in vielen Punkten erweitert und befestigt haben.

W. OSTWALD.

[*Translation.*]

DR W. W. J. NICOL has for a number of years carried on a series of extensive and accurate researches on the Laws of Solution. These researches were commenced at a time when this problem was still far from holding the very prominent position which it now occupies, and they have extended and established our knowledge of the subject on many points.

W. OSTWALD.

XX.

From the late HERMAN KOPP, Professor of Chemistry, Heidelberg.

HEIDELBERG.

GEEHRTER HERR,—Ich danke Ihnen aufrichtig für die Zusendung ihrer Abhandlungen über Lösung, welche ich heute zugleich mit ihren freundlichen Zeilen v. 23 d. M. erhalten habe. Ich hatte von diesen Untersuchungen in dem Masse, als sie mir in Zeitschriften vorkamen, mit Interesse Kenntniss genommen, und ich freue mich, dass ich sie jetzt vollständiger zusammen habe und die Benutzung derselben für mich erleichtert ist.—Hochachtungsvoll, Ihr ergebenster,

HERMANN KOPP.

[*Translation.*]

DEAR SIR,—I thank you sincerely for sending me your papers on Solution, which I received to-day along with your kind letter of the 23rd inst. I had studied these researches with interest in so far as they were accessible to me in scientific journals, and I am glad now to have them in a more complete form, so that reference to them is made easier for me.—Yours, &c.,

HERMANN KOPP.

XXI.

From J. HEADON BOOCOCK, Esq., Honorary Secretary of the Birmingham Insurance Institute.

BENNETT'S HILL,
BIRMINGHAM, *August 1892.*

I HAVE very great pleasure in testifying on behalf of the Members and Associates of this Institute, to the great value of the two courses of lectures delivered to us by Dr NICOL in 1891 and 1892. I feel certain that I am expressing the feelings of all when I say that we derived great benefit from the information imparted to us by Dr NICOL in such an able and agreeable manner.

J. HEADON BOOCOCK.

XXII.

From SUTTON CORKRAN, Esq., Honorary Secretary of the Worcester Students' Association.

WORCESTER, October 1890.

THE Course of Lectures delivered here by Dr NICOL was a marked success. He succeeded in a task where many fail, imparting a large amount of information in an attractive form, and gave an impetus to the study of Chemistry in this district.

That the Lectures were duly appreciated is proved by the remarkable increase in the attendance as the course progressed, so much so that the number present at the final lecture was more than double that at the first.

SUTTON CORKRAN.

The Course consisted of six Lectures, and the attendance steadily increased from 150 at the first to nearly 400 at the sixth Lecture.

XXIII

*From the HONORARY SECRETARIES of the Local Gilchrist Lectures at Newport, Bridgwater,
Frome, and Trowbridge.*

DEAR SIR,—We have much pleasure in testifying to the ability shown by you in delivering Lectures in connection with the Gilchrist Trust. Your Lectures were noted, in our opinion, for lucidity of style, success in experiment, and for your power of riveting the attention of your audience.

ARTHUR J. STEVENS,

Hon. Sec., Newport Local Committee.

THOMAS JONES, JUN.,

Hon. Sec., Newport Local Committee.

W. L. WINTERBOTHAM,

Hon. Sec., Bridgwater Lecture Committee.

ALFRED H. TUCKER,

Hon. Sec., Frome Lecture Committee.

T. CLARK,

Hon. Sec., Trowbridge.

XXIV.

From the HONORARY SECRETARIES of the Bristol Museum and Library.

BRISTOL.

DEAR SIR,—We have much pleasure in expressing our appreciation of the public lectures which you delivered in the Lecture Theatre of the above-named Institution, in the Easter of 1878, on "Water and Air." We have reason to believe that the lectures afforded much satisfaction to those who attended the course, with regard both to the subject matter and the experimental illustrations.—And are, dear sir, yours faithfully,

S. H. SWAYNE, }
PHILIP SLEEMAN, } *Hon. Secs.*

